



ARIZONA STATE UNIVERSITY  
GENERAL STUDIES COURSE PROPOSAL COVER FORM

**Course information:**

Copy and paste current course information from Class Search/Course Catalog.

Academic Unit School of computing, informatics, decision systems engineering Department Computer Science

Subject CSE Number 180 Title Computer Literacy Units: 3

Is this a cross-listed course? (Choose one)  
If yes, please identify course(s) No

Is this a shared course? (choose one) If so, list all academic units offering this course No

Course description:

**Requested designation:** (Choose One)

Note- a separate proposal is required for each designation requested

**Eligibility:**

Permanent numbered courses must have completed the university's review and approval process.  
For the rules governing approval of omnibus courses, contact [Phyllis.Lucie@asu.edu](mailto:Phyllis.Lucie@asu.edu) or [Lauren.Leo@asu.edu](mailto:Lauren.Leo@asu.edu).

**Submission deadlines dates are as follow:**

For Fall 2015 Effective Date: October 9, 2014

For Spring 2016 Effective Date: March 19, 2015

**Area(s) proposed course will serve:**

A single course may be proposed for more than one core or awareness area. A course may satisfy a core area requirement and more than one awareness area requirements concurrently, but may not satisfy requirements in two core areas simultaneously, even if approved for those areas. With departmental consent, an approved General Studies course may be counted toward both the General Studies requirement and the major program of study.

**Checklists for general studies designations:**

Complete and attach the appropriate checklist

- [Literacy and Critical Inquiry core courses \(L\)](#)
- [Mathematics core courses \(MA\)](#)
- [Computer/statistics/quantitative applications core courses \(CS\)](#)
- [Humanities, Arts and Design core courses \(HU\)](#)
- [Social-Behavioral Sciences core courses \(SB\)](#)
- [Natural Sciences core courses \(SO/SG\)](#)
- [Cultural Diversity in the United States courses \(C\)](#)
- [Global Awareness courses \(G\)](#)
- [Historical Awareness courses \(H\)](#)

**A complete proposal should include:**

- Signed General Studies Program Course Proposal Cover Form
- Criteria Checklist for the area
- Course Catalog description
- Course Syllabus
- Copy of Table of Contents from the textbook and list of required readings/books

**Respectfully request that proposals are submitted electronically with all files compiled into one PDF. If necessary, a hard copy of the proposal will be accepted.**

**Contact information:**

Name Xuerong (Sherry) Feng Phone 5-2855

Mail code 8809 E-mail: xuerong.feng@asu.edu

**Department Chair/Director approval:** (Required)

Chair/Director name (Typed): Dr. Sandeep Gupta Date: 2/3/2015

Chair/Director (Signature): 

**Arizona State University Criteria Checklist for**  
**MATHEMATICAL STUDIES [CS]**

**Rationale and Objectives**

The **Mathematical Studies** requirement is intended to ensure that students have skill in basic mathematics, can use mathematical analysis in their chosen fields, and can understand how computers can make mathematical analysis more powerful and efficient. The **Mathematical Studies** requirement is completed by satisfying both the **Mathematics [MA]** requirement and the **Computer/Statistics/Quantitative Applications [CS]** requirement explained below.

The **Mathematics [MA]** requirement, which ensures the acquisition of essential skill in basic mathematics, requires the student to complete a course in College Mathematics, College Algebra, or Pre-calculus; or demonstrate a higher level of skill by completing a mathematics course for which a course in the above three categories is a prerequisite.

The **Computer/Statistics/Quantitative Applications [CS]** requirement, which ensures skill in real world problem solving and analysis, requires the student to complete a course that uses some combination of computers, statistics, and/or mathematics.\* Computer usage is encouraged but not required in statistics and quantitative applications courses. At a minimum, such courses should include multiple demonstrations of how computers can be used to perform the analyses more efficiently.

\*CS does *not* stand for computer science in this context; the “S” stands for statistics. Courses in computer science must meet the criteria stated for CS courses.

Revised April 2014

Proposer: Please complete the following section and attach appropriate documentation.

<b>ASU--[CS] CRITERIA</b>			
<b>A COMPUTER/STATISTICS/QUANTITATIVE APPLICATIONS [CS] COURSE MUST SATISFY ONE OF THE FOLLOWING CRITERIA: 1, 2, OR 3</b>			
YES	NO		Identify Documentation Submitted
		<b>1. Computer applications*:</b> courses must satisfy both <b>a</b> and <b>b</b> :	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<b>a.</b> Course involves the use of computer programming languages or software programs for quantitative analysis, algorithmic design, modeling, simulation, animation, or statistics.	See chart on p. 5 - p. 7
		<b>b.</b> Course requires students to analyze and implement procedures that are applicable to at least one of the following problem domains ( <b>check those applicable</b> ):	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	i. Spreadsheet analysis, systems analysis and design, and decision support systems.	See chart on p. 5 - p. 7
<input checked="" type="checkbox"/>	<input type="checkbox"/>	ii. Graphic/artistic design using computers.	See chart on p. 5 - p. 7
<input type="checkbox"/>	<input type="checkbox"/>	iii. Music design using computer software.	
<input type="checkbox"/>	<input type="checkbox"/>	iv. Modeling, making extensive use of computer simulation.	
<input type="checkbox"/>	<input type="checkbox"/>	v. Statistics studies stressing the use of computer software.	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	vi. Algorithmic design and computational thinking.	See chart on p. 5 - p. 7
<p>*The <b>computer applications</b> requirement <b>cannot</b> be satisfied by a course, the content of which is restricted primarily to word processing or report preparation skills, the study of the social impact of computers, or methodologies to select software packages for specific applications. Courses that emphasize the use of a computer software package are acceptable only if students are required to understand, at an appropriate level, the theoretical principles embodied in the operation of the software and are required to construct, test, and implement procedures that use the software to accomplish tasks in the applicable problem domains. Courses that involve the learning of a computer programming language are acceptable only if they also include a substantial introduction to applications to one of the listed problem domains.</p>			

YES	NO		Identify Documentation Submitted
		<b>2. Statistical applications:</b> courses must satisfy <b>a, b,</b> and <b>c.</b>	
<input type="checkbox"/>	<input type="checkbox"/>	<b>a.</b> Course has a minimum mathematical prerequisite of College Mathematics, College Algebra, or Pre-calculus, or a course already approved as satisfying the MA requirement.	
		<b>b.</b> The course must be focused principally on developing knowledge in statistical inference and include coverage of all of the following:	
<input type="checkbox"/>	<input type="checkbox"/>	i. Design of a statistical study.	
<input type="checkbox"/>	<input type="checkbox"/>	ii. Summarization and interpretation of data.	
<input type="checkbox"/>	<input type="checkbox"/>	iii. Methods of sampling.	
<input type="checkbox"/>	<input type="checkbox"/>	iv. Standard probability models.	
<input type="checkbox"/>	<input type="checkbox"/>	v. Statistical estimation	
<input type="checkbox"/>	<input type="checkbox"/>	vi. Hypothesis testing.	
<input type="checkbox"/>	<input type="checkbox"/>	vii. Regression or correlation analysis.	
<input type="checkbox"/>	<input type="checkbox"/>	<b>c.</b> The course must include multiple demonstrations of how computers can be used to perform statistical analysis more efficiently, if use of computers to carry out the analysis is not required.	

YES	NO		Identify Documentation Submitted
		<b>3. Quantitative applications:</b> courses must satisfy <b>a, b, and c:</b>	
<input type="checkbox"/>	<input type="checkbox"/>	<b>a.</b> Course has a minimum mathematical prerequisite of College Mathematics, College Algebra, or Pre-calculus, or a course already approved as satisfying the MA requirement.	
		<b>b.</b> The course must be focused principally on the use of mathematical models in quantitative analysis and decision making. Examples of such models are:	
<input type="checkbox"/>	<input type="checkbox"/>	i. Linear programming.	
<input type="checkbox"/>	<input type="checkbox"/>	ii. Goal programming.	
<input type="checkbox"/>	<input type="checkbox"/>	iii. Integer programming.	
<input type="checkbox"/>	<input type="checkbox"/>	iv. Inventory models.	
<input type="checkbox"/>	<input type="checkbox"/>	v. Decision theory.	
<input type="checkbox"/>	<input type="checkbox"/>	vi. Simulation and Monte Carlo methods.	
<input type="checkbox"/>	<input type="checkbox"/>	vii. Other (explanation must be attached).	
<input type="checkbox"/>	<input type="checkbox"/>	<b>c.</b> The course must include multiple demonstrations of how computers can be used to perform the above applications more efficiently, if use of computers is not required by students.	

Course Prefix	Number	Title	General Studies Designation
CSE	180	Computer Literacy	CS

Explain in detail which student activities correspond to the **specific** designation criteria.  
Please use the following organizer to explain how the criteria are being met.

Criteria (from checklist)	How course meets spirit (contextualize specific examples in next column)	Please provide detailed evidence of how course meets criteria (i.e., where in syllabus)
<p>Criterion 1.a</p> <p>Course involves the use of computer programming languages or software programs for quantitative analysis, modeling, simulation, animation, or statistics</p>	<p>Criterion 1.a</p> <p>- Student in this course are required to master spreadsheet applications, including formulas, functions, charts, modeling and analysis. Students will practice on various business or "everyday" problems.</p> <p>- Students in this course will learn the basics of SQL (Structured Query Language) and are required to write SQL queries to generate reports on an online database. Students will analysis and interpret the results to support decision making.</p>	<p>Criterion 1.a</p> <p>1. Syllabus pp.2 "Major Topics Covered" 2. Textbook Chp.13 The Basics of Spreadsheets (see textbook TOC ) 1) Build a time zone "cheat sheet" to avoid calling friends in the middle of the night 2) Build a table to get the best deal when buying pizza 3) Develop data for helping to decide how much money to borrow for a "big ticket" purchase like a car or sound system.</p> <p>3. MyITLab Online MS Excel 2013 training (see syllabus pp.2 and class schedule module #2, #3 and #4)</p> <p>4. Spreadsheet project (see class schedule module #4) In this project, students are given a partially filled "Smith" family house purchasing mortgage plan. They are required to apply the knowledge they learn in MyITLab Excel training, compute and finish the budget worksheet, help the couple to estimates their take-home pay and expenses, set up the formulas, charts to make a final purchasing decision.</p> <p>1. Syllabus pp.2 "Major Topics Covered" 2. Textbook Chp.15 Introduction to Database Concepts (see textbook TOC and class schedule module #15) 3. Assignment: SQL Queries Bonus quiz #3: Database (see class schedule module #15) Online database can be found at: <a href="http://www.w3schools.com/sql/default.asp">http://www.w3schools.com/sql/default.asp</a></p>

<p>Criterion 1.b (i)</p> <p>Coure requires students to analyze and implement procedures that are applicable to the following problem domains</p> <p>i. Spreadsheet analysis, systems analysis and design, and decision support systems</p>	<p>Criterion 1.b (i)</p> <p>- Student in this course are required to master spreadsheet applications, including formulas, functions, charts, modeling and analysis. Students will practice on various business and "everyday" problems.</p>	<p>Criterion 1.b (i)</p> <p>1. Syllabus pp.2 “Major Topics Covered”  2. Textbook Chp.13 The Basics of Spreadsheets (see textbook Chp.13 learning objectives and introductory )  1) Build a time zone "cheat sheet" to avoid calling friends in the middle of the night  2) Build a table to get the best deal when buying pizza  3) Develop data for helping to decide how much money to borrow for a "big ticket" purchase like a car or sound system.</p> <p>3. MyITLab Online MS Excel 2013 training (see syllabus pp.2 and class schedule module #2, #3 and #4)</p> <p>4. Spreadsheet project (see class schedule module #4)  In this project, students are given a partially filled "Smith" family house purchasing mortgage plan. They are required to apply the knowledge they learn in MyITLab Excel training, compute and finish the budget worksheet, help the couple to estimates their take-home pay and expenses, set up the formulas, charts to make a final purchasing decision.</p>
<p>Criterion 1.b (ii)</p> <p>Graphic/Artistic design using computers</p>	<p>Criterion 1.b (ii)</p> <p>- Students in this course will learn HTML and design their own website. During the procedure, students will learn to use formatting, color, image and table tags to make their website attractive. They will also learn to use photo editing software to edit the photos.</p> <p>Students in this course will learn how information is represented – form basic bits, through sound and video, to virtual reality. They will learn the theory behind a digital photo editing software and will discuss JPEG, MPEG and the need for compression techniques for images and video.</p>	<p>Criterion 1.b (ii)</p> <p>1. Syllabus pp.2 “Major Topics Covered”  2. Textbook chp.4 A Hypertext Markup Language Primer (see textbook TOC)  3. The HTML Website project (see class schedule module #6, #7 and #8)  In this project, students are required to design a fully functioning website which contains at least two pages, namely index.html and resume.html. The website is required to contain texts, images and hyperlinks.</p> <p>1. Syllabus “Major Topics Covered”  2. Textbook Chp.7 &amp; 8 Representing Multimedia Digitally (see textbook TOC)  3. Bits/Byte (see class schedule module #9)  4. Multimedia (see class schedule module #10)</p>

<p>Criterion 1.b (vi)</p> <p>vi. Algorithmic design and computational thinking</p>	<p>Criterion 1.b (vi)</p> <p>Students in this course will familiarize themselves with algorithms and become adept at reading them, writing them and evaluating them.</p>	<p>Criterion 1.b (vi)</p> <ol style="list-style-type: none"><li>1. Syllabus pp.2 “Major Topics Covered”</li><li>2. Textbook Chp.10 Algorithmic Thinking (see textbook TOC)</li><li>3. Algorithm Quiz (see class schedule module #12)</li><li>4. Assignment: Flowchart (see class schedule module #12)</li></ol> <p>In this assignment, students are required to design an algorithm for the procedure of registering courses at ASU and draw a flowchart accordingly.</p>
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## CSE 180 Computer Literacy Syllabus

### Instructor

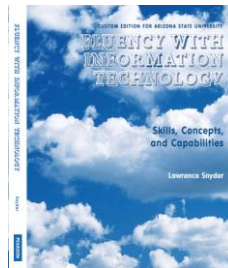
Dr. Xuerong (Sherry) Feng  
Office: Brickyard 512 (5th floor)  
Tel: (480)965-2855  
Email: Xuerong.feng@asu.edu

### Office Hour

Mon, Wed, Fri.: 10:00am ~ 11:00am  
(at Coor 150 Pod C or D and through Blackboard Virtual Office)

I will be very glad to schedule another time with you if above time slots are not convenient for you, just email me to set up a time.

### Textbook



(ASU Custom Version, 6<sup>th</sup> edition)

- *Students are required to purchase above e-Textbook along with MyITLab access code **directly** from our Blackboard course website. There will be an "E-Textbook" button on our course website which directs you to purchase the materials. (MyITLab is an Addison Wesley MS Word and MS Excel 2013 online Training program which we will use to train on MS Excel and Word).*

### Course Description

- This course provides students with the requisite knowledge and skills necessary to succeed in today's computing society.
- Students will gain fluency in integrating technology to efficiently and effectively solve problems using computational thinking.
- The course focus is on learning to learn, and enables students with the power to explore, discover and self-teach technology.
- All aspects of information technology are introduced at an exploratory level, with in depth attention to finding, evaluating, processing, and presenting information.
- This course will also provide an overview of issues in security, privacy and ethics.

## Course Objectives and Outcomes

Students who complete this course will gain

- Familiarity and comfort with basic computing concepts: computer parts, software, networking, collaborative computing, limits of computation, computer security, privacy and ethics, and the ubiquity of computers.
- Fluency in finding, evaluating, processing and presenting information.
- Knowledge and understanding of technology tools that enable problem solving with technology, including Web publishing, computational thinking, algorithms and spreadsheets.
- Exploratory knowledge of the art and science of information presentation.

## Major Topics Covered

- Information Technology and the Human-Computer interface
- Common Applications
- The Basics of Networking
- HTML website design
- Locating Information on the WWW
- Representing information digitally
- Computational thinking and algorithms
- Multimedia representation
- Information and society, security, privacy and ethics
- Spreadsheets, databases and queries
- Limits to Computation

## Grading

- 3 Projects: 10% each, total 30%
- MyITLab MS Excel & MS Word: 16%
- 17 ~20 Quizzes and Assignments: total 44%
- 1 Final Exam: 10%
- Grading breakdown (+/- System)

A+	A	B+	B	C+	C	D	E
97	90	87	80	77	70	60	Below 60

## Course Structure

You enrolled in an entirely online section and we assume you are prepared to take an online course. If you're not sure, please take the [Course Readiness Self-Assessment Quiz](#)

online to check your readiness. Please be aware, this is *not* a course on how to use a computer.

If you are using a home computer, please click on this [link to tune up your web browser](#) for MyITLab 2013, or you can check the technology requirements for it. In addition, you will need to have a reliable Internet connection. If you are not confident of your connection quality, you should utilize the computer labs on campus when completing online assignments and quizzes. Additionally, most libraries provide computers with reliable Internet access. If your connection is lost while completing a graded item, you could lose all work completed up to that point, possibly receiving a zero grade. Especially for the first week of the course, we highly recommend that you check to see whether you can run MyITLab 2013 training successfully on your PC. Note: **Equipment defects, technical difficulties cannot become excuses for late submissions.**

Please review the [Six Tips for Success in this Online Course](#). At any time during the course, if you feel you are struggling, you should seek assistance immediately. The longer you wait, the more difficult it will be to get back on track.

Please be aware that you enrolled in an online section, when you have questions, the primary help you can get is through Discussion Board. After you post your question on discussion board, we will try our best to answer your question as quickly as we can (within 48 hours), be aware that the communication on discussion board is synchronized, so always start earlier and leave enough time for your question be answered before the due date/time.

### Course Web Site

- In order to access online teaching materials, you need to get an ASURITE account as soon as possible. Please click on the following link to view instructions on how to get an ASURITE ID. If you experience any difficulty, please let us know as soon as possible.

<https://alumni.asu.edu/services/alumni-directory/asurite-id-faqs>

- All lecture slides, projects/assignments, quizzes will be posted and submit through Blackboard. *Again, any equipment defects, technical difficulties cannot become excuses for late submissions.*
- The course is organized as weekly submission folders, unless specified otherwise; each weekly folder contains two modules (sub-folder). **These modules are due either on Tuesday or Thursday of the week at 11:59pm Arizona Time.** We will make the weekly folders available to students at least two weeks ahead of its due date/time. Students are highly recommended and encouraged to work ahead at their own pace since there is no penalty for early submission, but grades for manually graded assignments may not be posted until after the due date. Pay attention to due dates and plan accordingly since *no late submissions will be accepted and missed*

assignments/projects/quizzes will be assigned a grade of zero (or -) automatically by the system.

- Grade disputes need to be emailed to the corresponding TA within one week of grade posting. After one week, a posted grade will not be reconsidered. Later in the semester I will not look at assignments/projects submitted earlier in the semester.
- It is the student's responsibility to check the announcement page as often as the semester progresses and to start working on the assignment as soon as it is posted. It is very important to check the course website frequently.

### Miscellaneous

- **Missed quizzes/Assignments/tests:** if you need to miss a quiz/test/assignment, you must have a legitimate university approved excuse, such as a severe injury, illness or participation in a legal proceeding that require your presence, etc. You must contact the instructor and provide satisfactory evidence *prior or within two days after the absence*. A missed quiz/test/assignment without permission or supporting documents is a zero.
- **E-mail policy:** as this is an online course, if you have any questions on course related materials, such as an assignment or a project, you should:
  - First, post your questions on discussion board and we will answer it as soon as possible (within 48 hours), or
  - ask me or TA during our online office hour (through discussion board)

Please refrain from sending an email to us since communication through email is very inefficient as a lot of times we have to answer the same question multiple times. On the other hand, please feel free to send an email to us if you have any questions on your grades or any other personal issues which you think are not appropriate to discuss it publicly.

- **Withdraw:** if you wish to withdraw from the class, submitting a completed withdraw form to the registrar office is the only guaranteed way to officially withdrawing from the class. Logon to the following website to see detailed withdraw policies.  
<http://www.asu.edu/aad/manuals/usi/usi201-08.html>
- **Incomplete grade** will NOT be given for this course. Please check the university policy on this at <http://www.asu.edu/aad/manuals/usi/usi203-09.html>. Please do not come to me during or at the end of the semester and ask for an "I" grade simply because you have fallen behind.
- **Academic Integrity:** Cheating, plagiarism will not be tolerated and will result in "E" grade in the course. All the assignments should be Individual work. Copy from other person's work in any manner is prohibited. You can discuss course materials, but you

should not discuss or give a copy of your work to another person. The instructor reserves the rights to check the similarity of two works randomly. For more information on university academic integrity policy, click on the following website: [http://www.asu.edu/studentaffairs/studentlife/judicial/academic\\_integrity.htm](http://www.asu.edu/studentaffairs/studentlife/judicial/academic_integrity.htm)

- **DRC Service:** Students requesting classroom accommodations or modifications because of a documented disability must contact the Disability Resource Center. The phone number is (480)965-4732. For additional information concerning the services provided by the center, please visit their web site at <http://www.asu.edu/studentaffairs/ed/drc/>

### CSE180 Class Schedule

Week	Module No.	Reading Assignments	Assignments	Projects & Final Exam
1	Module 1	Course syllabus, class schedule and grading breakdown.	1. Discussion board check in. 2. Course readiness self assessment. 3. Quiz on syllabus. 4. myITLab - Getting Started with myitlab	
	Module 2	Chp.13: Fill-in-the-Blank Computing: Basics of Spreadsheets	1. myITlab - Getting Started with myitlab 2. myITlab - MS Excel Chapter 1	
2	Module 3	(continue on myitlab)	1. myITlab - MS Excel Chapter 2 2. myITlab - MS Excel Chapter 3	
	Module 4	Chp.1: Terms of Endearment: Defining Information Technology (continue on myitlab)	1. myITLab - MS Excel Chapter 4 2. Spreadsheet Project.	<b>Project #1: Spreadsheet &amp; Chart</b>
3	Module 5	Chp.2: Face it, It's a Computer: Exploring the Human-Computer Interface	1. Quiz: Applications 2. myITlab - MS Word Chapter 1	
	Module 6	Chp.3: Making the Connection: The Basics of Networking	1. Quiz: Networking 2. myITLab - MS Word Chapter 2 3. Website setup	
4	Module 7	Chp.4: Marking Up with HTML: A Hypertext Markup Language	1. Set up the index.html page. 2. <b>Bonus Quiz #1: HTML</b>	
	Module 8	Chp.5: The Search for Truth: Locating Information on the WWW	1. Set up the resume.html page and refine your website. 2. Assignment: Scavenger Hunt.	<b>Project #2: Web Site</b>
5	Module 9	Chp.7: Bits and the "Why" of Bytes: Representing Information Digitally	1. myITLab - MS Word Chapter 3 2. Quiz: Bits/Bytes	
	Module 10	Chp.8: Light, Sound, Magic: Representing Multimedia Digitally	Quiz: Multimedia	
6	Module 11	Chp.9: Following Instructions: Principles of Computer Operation	1. myITLab - MS Word Chapter 4 2. <b>Bonus Quiz #2: Computer Operation</b>	
	Module 12	Chp.10: What's the Plan? Algorithmic Thinking	1. Quiz: Algorithm 2. Assignment: flowchart	
7	Module 13	Chp.11: Computers in Polite Society: Social Implications of IT	Quiz: Security I	
	Module 14	Chp.12: Shhh, It's a Secret: Privacy and Digital Security	1. Wiki project. 2. Quiz: Security II	<b>Project #3: Wiki - Privacy/Security</b>
8	Module 15	Chp.15: A Table with a View: Introduction to Database Concepts	1. Assignment: SQL Queries 2. <b>Bonus Quiz #3: Database</b>	
	Module 16	Chp.23: A Fluency Summary: Click to Close	Final exam review posted online	<b>Final Exam</b>

## Course Catalogue Description

CSE 180	<p>Computer Literacy Students gain fluency in integrating technology to efficiently and effectively solve problems using computational thinking. <b>Allow multiple enrollments:</b> No      <b>Primary course component:</b> Lecture <b>Repeatable for credit:</b> No              <b>Grading method:</b> Student Option <b>Offered by:</b> Ira A. Fulton Schools of Engineering -- Computer Science and Engineering Program</p>
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CUSTOM EDITION FOR ARIZONA STATE UNIVERSITY

# FLUENCY WITH INFORMATION TECHNOLOGY

**Skills, Concepts,  
and Capabilities**

Lawrence Snyder



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# A Hypertext Markup Language Primer

## Marking Up with HTML

### learning objectives

- › Know the meaning of and use hypertext terms
- › Use HTML tags to structure a document
- › Use HTML tag attributes
- › Use HTML tags to link to other files
- › Explain the differences between absolute and relative pathnames
- › Use Cascading Style Sheets to style a Web page
- › Use HTML to encode lists and tables



# Representing Multimedia Digitally

Light, Sound, Magic

## learning objectives

- › Explain how RGB color is represented in bytes
- › Explain the difference between “bits” and “binary numbers”
- › Change an RGB color by binary addition
- › Explain concepts related to digitizing sound waves
- › Explain the meaning of the Bias-Free Universal Medium Principle

chapter



# Algorithmic Thinking

## What's the Plan?

### learning objectives

- › List the five essential properties of an algorithm
- › Explain similarities and differences among algorithms, programs, and heuristic solutions
- › Use the *Intersect Alphabetized List* algorithm to do the following:
  - Follow the flow of the instruction execution
  - Follow an analysis to pinpoint assumptions
- › Demonstrate algorithmic thinking by being able to do the following:
  - Explain the importance of alphabetical order on the solution
  - Explain the importance of the barrier abstraction for correctness

chapter



# The Basics of Spreadsheets

## 13 chapter

### Fill-in-the-Blank Computing

#### learning objectives

- › Explain how data is organized in spreadsheets
- › Describe how to refer to spreadsheet rows, columns, and cell ranges
- › Explain relative and absolute references
- › Apply concepts of relative and absolute references when filling a formula
- › Explain the concept of tab-delimited input and output



# Introduction to Database Concepts

## 15 chapter

### A Table with a View

#### learning objectives

- › Use XML to describe the metadata for a table of information, and classify the uses of the tags as identification, affinity, or collection
- › Explain the differences between everyday tables and database tables
- › Explain how the concepts of entities and attributes are used to design a database table
- › Use the six database operations: Select, Project, Union, Difference, Product, and Join
- › Describe the differences between physical and logical databases
- › Express a query using Query By Example

